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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/739,743	12/20/2000	Sun-OO Kim	08244.0026	4983

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EXAMINER

COLEMAN, WILLIAM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 05/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/739,743

Applicant(s)

KIM, SUN-OO

Examiner

W. David Coleman

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of claims 2-6 is withdrawn in view of the newly discovered reference(s) to Ikeda, U.S. Patent 5,593,741 in view of Hazani, U.S. Patent 5,677,867.

Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda, U.S. Patent 5,593,741 in view of Hazani, U.S. Patent 5,677,867.

4. Pertaining to claim 2, Ikeda discloses a semiconductor process substantially as claimed. Please see **FIGS. 1-17** where Ikeda teaches a method for manufacturing an interlayer dielectric layer, the method comprising the steps of:

b) spraying a silicon source material and hydrogen peroxide (H_2O_2) in a gaseous state on the active matrix at a temperature ranging from approximately $-20^{\circ}C$ to approximately $600^{\circ}C$; and c) forming the interlayer dielectric layer on the active matrix by a condensation reaction of the silicon source material and the H_2O_2 without performing a post thermal treatment, wherein the silicon source material includes a tetra-ethyl-ortho-silicate (TEOS). However, Ikeda fails to specifically disclose setting an active matrix provided with a substrate and on the substrate in a chamber. Hazani teaches setting an active matrix (See FIG. 1) provided with a

substrate and on the substrate in a chamber (column 26, lines 1-30 discloses the use of a PECVD process which incorporates a chamber). In view of Hazani, it would have been obvious to one of ordinary skill in the art to incorporate the term active matrix in the Ikeda semiconductor process because an array of memory cells is defined at the intersection of each source/drain line (column 9, lines 14-15).

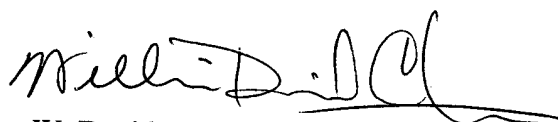
5. Pertaining to claim 3, Ikeda teaches the method as recited in claim 2, wherein the tetra-ethyl-orthosilicate is a modified tetra-ethyl-ortho-silicate (TEOS).
6. Pertaining to claim 4, Ikeda teaches the method as recited in claim 2, wherein the step of spraying a silicon source material includes supplying simultaneously an inert gas when the silicon source material and the hydrogen peroxide (H_2O_2) are supplied into a flow rate controller (column 11, lines 24-68).
7. Pertaining to claim 5, Ikeda teaches the method as recited in claim 2, wherein the step of spraying a silicon source material includes supplying simultaneously an inert gas(i.e., helium gas, column 11, line 33) when the silicon source material and the hydrogen peroxide (H_2O_2) are supplied into a distributor in the chamber.
8. Pertaining to claim 6, Ikeda teaches the method as recited in claim 2, wherein the step of forming an interlayer dielectric layer includes adding to the hydrogen peroxide (H_2O_2) and the tetra ethyl ortho silicate (TEOS) one or more of boron (B) and phosphor (P) (column 7, lines 54-60).
9. Pertaining to claim 7, Ikeda teaches the method as recited in claim 2, wherein a pressure in the chamber ranges from approximately 1 Torr to approximately 2 Torr (column 5, lines 23-24).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004. The examiner can normally be reached on 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



W. David Coleman
Primary Examiner
Art Unit 2823

WDC
April 29, 2003